

METHOD FOR FORMING SELF-ALIGNED TRENCH

ABSTRACT OF THE INVENTION

5 A method for forming a self-aligned trench is disclosed. The steps of the method include providing a semiconductor substrate with a buried layer. A buffer layer and a first hard mask layer are formed sequentially on a surface of the semiconductor substrate. Parts of the first hard mask layer, the buffer layer and the semiconductor substrate are removed to form openings. A capacitor is
10 formed in the interior of the opening of the semiconductor substrate. A second hard mask layer is formed conformally on the first hard mask layer and the capacitor. An insulator layer and a pattern photoresist layer are formed sequentially on the second hard mask layer. Parts of the insulator layer, the second hard mask layer, the first hard mask layer, the buffer layer, and the
15 semiconductor substrate are removed, with a part of said insulator layer as a mask, to form a self-aligned trench in the middle between partial said two capacitors, wherein a different removing rate exists between the insulator layer and the second hard mask layer.